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Office of Technical Assistance
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

Toxics Use Reduction Case Study

SOLVENT USE REDUCTION AT LAMPIN CORPORATION

SUMMARY

Lampin Corporation replaced its chlorofluorocarbon (CFC) degreasing operations with a hot water washing process. The new process successfully cleans 95% of their products on the first run-through, while creating two-thirds less sludge than the old solvent-based process. The change, which has saved the firm approximately $6,000 per year in CFC purchase costs alone, paid for itself in a little more than one year.

BACKGROUND

Lampin Corporation is a small manufacturer of precision-machined parts and components located in Uxbridge, Massachusetts. Lampin uses a sulphur-based cutting oil in machining its parts, and this oil must be removed from the finished products. Originally, Lampin used trichloroethylene (TCE) as a degreasing agent. The firm switched to CFCs because they are safer for workers, less toxic to the immediate environment, and just as effective in removing cutting oils.

OTA CONSULTATION

Scott Rossiter, president of Lampin Corporation, attended a local metal finishing trade association meeting, where he heard representatives of the Office of Technical Assistance (OTA) speaking about the general idea of pollution prevention -- that is, the idea of reducing or eliminating potential pollutants at the source, in the production processes themselves. Rossiter then attended an OTA workshop dealing with the specific issue of solvent substitution. After this workshop, Rossiter decided to implement changes that would eliminate his firm's use of CFCs -- in part because of the detrimental effect of this chemical on the stratospheric ozone layer, and in part because the changes in question promised to save Lampin money.

TOXICS USE REDUCTION MODIFICATIONS

In the spring of 1990, Lampin suspended its use of CFCs. The firm removed its CFC tank and installed two new tanks in its place -- one for hot-water washing and the other for rinsing (see

recycled paper

Figure 1). This new process successfully cleans about 95% of Lampin's products on the first run-through. It has proven even more effective than the old CFC process in cleaning heavily greased items, which comprise about 5% of Lampin's work.

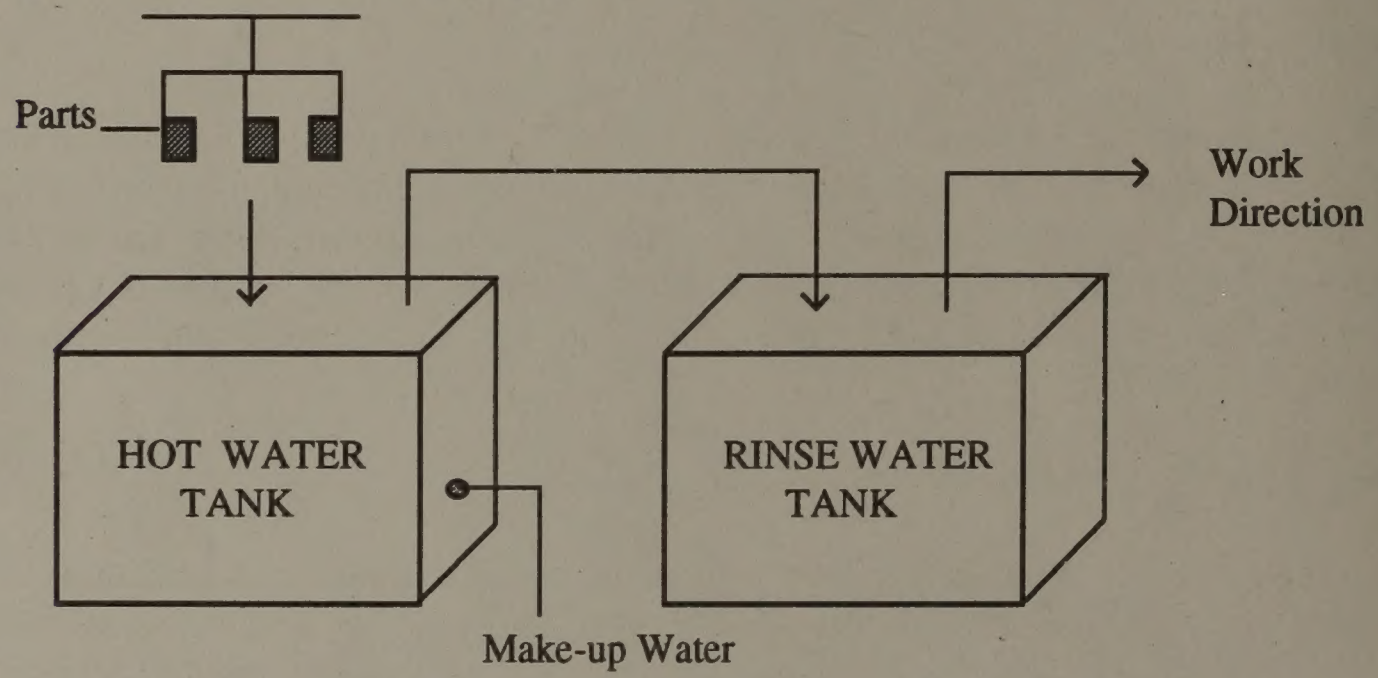
RESULTS

Reductions Achieved: By installing its hot-water wash tank, Lampin entirely eliminated its use of CFCs. Lampin can now maintain its degreasing operations merely by adding hot water to the wash tank from time to time, to make up for evaporative losses. The new process also created two-thirds less sludge than the old one, thus reducing handling and disposal costs.

Economics: The change has saved Lampin approximately $6,000 per year in CFC purchase costs alone. Since the cost of CFCs is rising rapidly, the annual savings are likely to increase with time. And since the change led to significant reductions in sludge volumes, Lampin's handling and disposal costs have also been reduced.

The cost of the new hot-water tanks, including installation, was about $10,000. Taking into account the savings in raw materials, labor, disposal and maintenance, the payback period on this investment is estimated to be little more than one year.

Figure 1: *Lampin's Hot-Water Degreasing System:*



This Case Study is one of a series of such documents prepared by the Office of Technical Assistance (OTA), a branch of the Massachusetts Executive Office of Environmental Affairs whose mission is to assist industry in reducing the use of toxic chemicals and/or the generation of toxic manufacturing byproducts. OTA's ***non-regulatory*** *services are available at* ***no charge*** *to Massachusetts businesses and institutions that use toxics. For further information about this or other case studies, or about OTA's technical services, contact:* ***Office of Technical Assistance, Executive Office of Environmental Affairs, 100 Cambridge Street, Boston, Massachusetts 02202****, or phone OTA at* ***(617) 727-3260****.*